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ABSTRACT

An introduction to a symposium on the development of adolescent schooling is followed by one of several presentations concerning current thinking about the problems involved in developing experimenting schools. The paper elaborates the basic propositions about modernization, the process of school reform seen as a process of social learning, and the methods of evolutionary experimentation. It is proposed that the school as a whole, conceived as a developing social organism, be taken as an experimental proposition to be shaped and reformed through methods of evolutionary experimentation. The goal of this experimentation, and the criterion for it, is to discover and to operate schools which can facilitate learning by adolescents who are in charge of their own learning processes and cope successfully with the problems and opportunities they confront. It is felt that modernization permits, as well as demands, that attempts be undertaken to learn what schools might become. In conclusion, it is noted that to discover how to make schooling facilitative and supportive of the development of the young, it is essential to consider school as an experimental proposition. (Author/KSM)

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SCHOOL AS AN EXPERIMENTING INSTITUTION: AN APPROACH TO THE REFORM OF SECONDARY EDUCATION

a paper presented at
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Chicago, Illinois April 18, 1974

by

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Introduction: A Strategy for the Reform of Secondary Schooling

In this symposium we propose a new way of looking at the problem of schooling in the twentieth century which may be seen as simultaneously both radical and conservative. We have the temerity to expose our view at this time, knowing that it is crude, preliminary, and subject to much further refinement and revision, for two main reasons. The first is our conviction that schooling in many countries is in a stage of acute crisis, with profound implications for the future of free men, and that confrontation of that crisis is urgently needed. The other reason is that we believe our offered approach is one which can assure success in resolving that crisis. The immodesty of this claim is based not on our personal genius or, for that matter, on the originality of the ideas presented here. Rather our confidence rests on our faith in man and his capacity to learn through the use of methods of science.

We see the pursuit of solutions to major and fundamental social issues as an essentially conservative enterprise when it utilizes the methods of the scientific tradition. What is radical in our proposal is its inversion of the usual way of looking at schooling: we suggest that instead of seeing schooling as something established and given by tradition, as an autonomous institution which molds and shapes the young, that school itself should be taken as an experimental proposition to be shaped and molded by the realities of human development needs and possibilities.

In pursuing this approach, we have begun to form an international consortium of persons seeking to develop experimenting schools which will facilitate the growth of adolescents' capacities to live successfully in modernizing societies. We are trying to engage the collaboration of social scientists, persons in school leadership positions, teachers and parents who share our concern with a fundamental issue of our time: the reform of adolescent schooling.

School districts and departments of education in many places in the world increasingly are confronting the need to reform schooling in order to adjust to the pressures of social change and modernization. These pressures, which appear macro-scopically in such forms as an increasing need for highly-qualified manpower, more extended and differentiated formal and informal education and the demand for equity in educational opportunity, also appear in a person-centered form of increasing alienation and frustration among the young who lack emotional security, support and social skills and for whom institutions are barriers to, rather than instruments for, realizing personal opportunity.

Many school systems have responded to these pressures in limited ways by investing more heavily in research and curriculum development, by creating compensatory programs and by developing or supporting new social institutions outside the formal school system. They have not, by and large, seriously confronted the basic issue: how can schools be designed and operated to satisfy the needs of all young people to learn to live successfully and to participate fully in a modernizing society?

We intend to propose a strategy for confronting that basic issue--a strategy based on five basic propositions which I will summarize here.

First, we suggest that schools are social organisms which have their own social structures and processes and which must be rooted firmly in the needs and expectations of their students and communities if they are to live and grow. Schools must be responsible, not simply to their students but also to their teachers and staff and to the communities which support them; they also must be meaningful and valuable to persons in the social contexts which they serve. We believe that the development of social organisms such as schools must generate from nodes of strength and energy which have roots in the communal lives of individual persons. Development cannot be generated in some ivory tower and then disseminated to local schools; rather it must grow from the needs and aspirations of the persons involved in those schools.

Secondly, we believe that modernization--a process of dynamic and pervasive social transformation--places oppressively heavy obligations on human personalities, particularly those of persons from disadvantaged groups. The individual in a modernizing society must accept personal responsibility in unprecedented form for active, self-directive participation in a rapidly changing and increasingly complex social environment. Only the prepared, well-equipped, secure, self-directive, autonomous person capable of looking out for his own self-development and able to cooperate with others able to support him can flourish under these conditions. Therefore, in our view, the goal of education in modernizing societies should be to cultivate the capacity of each of its members to

be in charge of his own learning and developmental processes, processes we refer to as self-development and coping.

Thirdly, although substantial efforts toward innovative programs for cultivating content and skill-oriented abilities of students have been going forward in various countries, they have had little or no effect on the overall development of the majority of students. The reason for such failure, we assume, is that incremental program development inside a schooling context which is little changed is too weak to produce the needed results. It is becoming increasingly clear that metamorphic development of schooling is needed. Consequently, we believe, the focus must be on reform of the whole school, not on a single part of it.

Fourthly, we see metamorphic or comprehensive school reform as an enterprise of "social learning": a process through which the people involved in a school--the staff, students, parents, and interested community members--collectively learn to confront and to deal with problems involved in cultivating the learning of students. We suggest that the school must be viewed by its participants as a developing, active, adaptive, social organization. We believe that a school can and should be able actively to pursue its own development and adaptation to changes in the social conditions surrounding it through processes of social or collective learning.

Fifthly, we suggest that schools which actively seek their own development must pursue desired, self-chosen goals through processes of systematic and self-conscious experimenting. This is a method of scientific inquiry which has been called "evolutionary experimentation"--an

iterative process of hypothesis formulation and testing in which results are judged by the degree to which they produce convergence toward desired and explicitly chosen goals.

In short, we propose that the school as a whole, conceived as a developing social organism, be taken as an experimental proposition, to be shaped and reformed through the methods of evolutionary experimentation. The overriding goal of this experimentation, and therefore, the overall criterion for experimenting, is to discover and to operate schools which can facilitate learning by adolescents to be in charge of their own learning processes and to cope successfully with the problems and opportunities they confront. We do not know in detail how schools should be changed. We believe, however, that modernization permits, as well as demands, that attempts be undertaken to learn what schools might become.

In order to support efforts of school reform viewed in this way, we have formed an international consortium--the International Association for the Development of Adolescent Schooling. We believe that a facilitative international association can support learning about the processes of institutional development by conceiving local experimenting schools as sample cases of living social organisms in a coordinated cross-sectional and longitudinal matrix of inquiry. The developmental activities of each local unit need to be designed on a cross-sectional foundation and developed longitudinally in order to be scientifically valid and educationally relevant. By viewing those activities from a broader, international frame of reference, teams in various cultural

settings can collectively discover more about the processes of human coping and institutional development than if they worked independently.

One reason for the power of this development and research strategy is that it will enable participants to avoid the ethnocentrism so characteristic of studies of the modernization process and of institutional development and, at the same time, to generalize more confidently about results of experimentation that are substantiated in many sample cases.

A second reason is that comparison of local units in societies at differing stages of modernization gives the possibility of advancing knowledge in a relatively short period of time. Cross-sectional comparisons--seen as examples of various developmental states in the general process of modernization--can enable participants to estimate the consequences of particular activities or to predict problems and issues which may emerge later in their own process of institutional development. In other words it may be possible to learn through cross-sectional analysis what otherwise might require generations of experience.

Thirdly, the international approach gives the opportunity for intelligent selective borrowing across cultures as a result of the cross-validation of experimental findings. This frame of analysis can allow learning about fundamentals of school reform and institutional development in modernizing societies in substantially more powerful forms than would be possible in a single cultural context or a smaller scale comparative form of research.

In the presentations to follow, we will present some of our current thinking about the problems involved in developing experimenting schools

in the context of a supportive international consortium. My own paper--which time constraints will not permit me to read--seeks to elaborate the basic propositions about modernization, the process of school reform seen as a process of social learning, and the methods of evolutionary experimentation. Professor Smilansky will present some views on the design of experimenting schools appropriate to the needs of disadvantaged adolescents. Mr. Newburg will be addressing problems of staff development. Dr. Finklestein will discuss approaches to the development of community involvement and support in creating experimenting schools. Dr. Emmons will present some views on problems of evaluation in the school and Dr. Kean will consider problems of evaluation from the point of view of an international network of cooperating experimenting schools. After brief presentations by these gentlemen, we would like to respond to your concerns and questions as a panel.

Modernization and Its Impact on Individuals and Institutions

While the three principal elements of modernization--industrialization and technological change, urbanization and population growth, and secularization--continue to spread in communities around the world, some social scientists are beginning to address questions which emerge as the process continues to unfold in what are called "post-modern" or "post-industrial" societies. Concepts such as the "temporary society," "future shock," the "active society," and the "identity society," are used to express views of the current and expected future conditions of the highly modern society.

As modernization processes progressively influence social life, the configuration of each individual person's life space, of his problems and opportunities, changes. Human needs for security and for support, both

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In a collective conceptual enterprise, it often is difficult to know who originated a particular idea or even whether any individual was responsible for it. This is particularly true in this case. Consequently, the author wants to acknowledge the contributions of his colleagues, Deborah Dye Coleman, Joseph Davis, Chrysostomos Sofianos, Ross Mooney, and--especially--Moshe Smilansky. They contributed much to the development of these ideas, but they are not responsible for their present formulation.

physiologically and psychologically, persist, but the institutional arrangements which provided them successfully in an earlier stage of modernization may disappear or become ineffective. For example, in an earlier stage when the extended family was intact, it served as a stable and effective basis of support for the formation of personal identity and self-esteem. When the neighborhood was a stable network of institutions, it provided sustenance and stability for the families living there. In modern urban centers, however, mobility often separates the nuclear family from the extended family; neighborhood institutions are broken and replaced by outlets of impersonalized, conglomerate corporations or governments. Work and home are sharply separated. Services are provided by increasingly differentiated institutions with little coordination and no "guidebook" or guidance system to inform the person who needs a service where or how to acquire it. Post-modern societies are becoming so differentiated, so complex and so rationalized and functional in their mode of operation that heavy burdens are placed on the individual and on family units. Here is one sociologist's interpretation of this impact on the post-modern United States:

> Such are some of the predicaments of an increasing number of contemporary Americans: earning a living at jobs that often have little apparent relevance to the total organizational task; finding the point of gravity of existence determined by powerful organizations over which they have little control; living in cities which possess areas where they themselves or their children, dare not venture at night, or living in suburbs that fragment the domestic and work roles into separate compartments; pummeled and manipulated by the mass media which endlessly incite their tastes and desires; entrapped in a web of credit obligations; largely unable to integrate life into an autonomous system in which the major problems of existence are under personal control. It is little

> wonder under such circumstances that contemporary men often decline to come forward and testify to accidents, or even to murders committed before their very eyes, to say nothing of offering help. It is little wonder that conformity often emerges as the primary strategy for dealing with life's problems. It is no surprise that contemporary men, despite their material wealth, feel that they are hurried, pestered by the large organizations they serve, de-individualized, and alienated, and that they have little more than a variety of organizational symbols such as a driver's license, social security number, insurance policy number, credit card, checking account number, credit rating, and a set of keys fitting a variety of locks to prove personal identity.[1]

Social institutions, operating in ways that were appropriate in an earlier stage of modernization, may no longer adequately serve the needs of the people of this stage: local money-lenders and savings accumulated under the mattress are replaced by checking accounts and credit arrangements integrated into electronic data processing systems linking banks nationally and internationally; "separate but equal" schools by law must be replaced by integrated schools; personal identity based on inherited social status must be found through personal achievement in the "meritocratic society" and so forth. An obligation to adapt, probably at an increasing rate, presses more heavily on existing social institutions as the process of modernization continues to unfold. It presses not least on schooling institutions.

The process of modernization may be viewed as a revolutionary, comprehensive and dynamic process of social transformation. In time, all human activity within the society is affected and all social institutions must be transformed, at least in some respects, in order to remain relevant to emerging expectations and needs.

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[1]Don Martindale, "Timidity, Conformity, and the Search for Personal Identity," The Annals, Vol. 378 (July, 1968), 89.

Given the foregoing interpretation of social change as a process of dynamic modernization, two principal conclusions follow: 1) that modernization forces and processes are irreversible and likely to persist in the future, and 2) that their consequences for individual persons are to make a wider range of options or choices available to progressively larger proportions of the population. Therefore, more persons require more skill in making choices as modernization progresses and, as these processes continue into the indefinite future, new configurations of choices and opportunities will emerge. From the point of view of the individual, the choices or opportunities with which we are concerned may be called strategic choices, those of major magnitude in terms of their consequences and the degree to which they influence the configuration of possible options in the future of the individual.

For example, industrialization and progressive differentiation in society produce continually expanding strategic options for larger proportions of the population with regard to formal and informal education and training. New occupations continually emerge, many of which require greater levels of knowledge and skill. As social services become institutionalized, individuals have more functional relations with a larger set of persons and agencies who are purveyors of services, products, and obligations.

Furthermore, technological development opens to individuals more options such as a wider range of potential mates, friends, living patterns, housing and entertainment possibilities and a wider range of choices in family planning and child rearing. Secularization and expanded communications make possible a much wider range of choices with regard to possible ideologies, values, attitudes and ideas.

When an individual is confronted by a wider range of strategic options, he needs to be aware of their existence, to be able to take advantage of them and to be able to choose from among them wisely in terms of his own value-structure, needs and criteria; otherwise, he is relatively disadvantaged in comparison with those who are able to utilize those possibilities. We define the disadvantaged as those who, relatively speaking, have less power and are less well-equipped to live in modernizing society in its present stage and pattern and as it changes into the future. For these reasons, therefore, we believe that democratic societies have an obligation to enable their members, particularly the young and especially the disadvantaged, to learn to be fully participating in freedom and responsibility. This we take as the primary aim of education in modernizing societies.

As we have spelled out in some detail elsewhere, we conceive this aim for schooling to be responsibility for cultivation of the self-development and coping capacities of the young. Based on our interpretation of the process of modernization and our conception of the good society:

> We view the good society as a democracy in which each individual has the opportunity and the capacity to participate as a free and equal, though unique, person. A free person in a democracy is one who, knowing who he is, chooses and acts to overcome his problems and to utilize his potentialities for purposes and goals of his own choice in collaboration with other free persons. Every person's ability to cope is based on his view of himself: awareness of who he is, his origins, his experiences, his aptitudes, opportunities, values and goals. Self-directive participation in a democratic society is our ideal and our value base.[2]

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[2]Moshe Smilansky and Donald P. Sanders, "The Education of Disadvantaged Adolescents," The Educational Forum (forthcoming).

There is abundant evidence that schools as now operating are incapable of providing to the young, and particularly to the disadvantaged, the kinds of self-development and coping capacities required for successful participation in modernizing society. As the International Commission on the Development of Education put it:

> The malfunction of much educational practice makes renovation in education necessary. Changes in socio-economic structures and the scientific and technological revolution make it imperative. Scientific research and technological progress related to education, combined with growing awareness among the peoples of the world, make it possible.[3]

Schools designed to transmit a relatively stable culture, to socialize the young differentially according to their social status, to select the able or talented for higher status positions (and to select out those deemed unable or untalented) are not adequate in secular, democratic, industrial and urban modern society. They are not adequate to the task either from the point of view of society as a whole or from the point of view of individuals who must learn how to live a satisfying life in that society.

The Reform of Schooling

How might school reform be undertaken as a strategy for enabling the members of a modernizing society to cope and to pursue self-development? Basically, we believe by treating school as an experimental proposition and by systematic, persistent, and deliberate efforts to answer this fundamental question: What social arrangements for delivering educational services to the young can be discovered which will foster their learning

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[3]Edgar Faure, et al., Learning To Be: The World of Education Today and Tomorrow (Paris: UNESCO, 1972), p. 105.

to cope with the problems and opportunities they face in modernizing societies? It should be noted that schooling, in the sense we use that term, refers to the deliberate creation of learning experiences for support of the learning process of pupils or students; the concept is not restricted to a conventional school but includes such educational services as provided by the Parkway Program in Philadelphia and by other "schools without walls." Many such special programs are successful for some learners, to some degree at least. The point is that many different social systems can be conceived through which educational services might be provided.

What we are suggesting is an inversion of the usual way of looking at schooling. Instead of seeing schooling as something fixed and given by tradition, as an autonomous institution which molds and shapes the young, we propose that school itself should be taken as an experimental proposition to be shaped and molded by the realities of human developm needs and possibilities. We do not know in detail how this fundamenta question can best be answered. We are convinced that the conventional responses of schools to the demands of modernization are inadequate. So far schools and school systems around the world have generally chosen the easiest response to pressures for reform: They have simply added new programs to those which already existed. When, for example, educators became concerned that some children could not learn to read in conventional reading programs, additional programs were added. When it was discovered in the traditional school that the young were not gaining enough in cognitive development, the school responded in two ways. One response was to extend the number of years of schooling by adding preschool

and raising the minimum age for dropping out. The other response was to intensify the typical forms of instruction either through tutoring or individualized instructional techniques. Spending more money, adding more programs, making quantitative but not qualitative adaptations has generally been the adopted solution. But there are serious limits to this type of adaptation; resources of money, personnel and facilities are not unlimited and neither are the capacities of the young to endure repetitive, "irrelevant," ineffective, "unreal" and interminable schooling.

By systematically creating and testing new institutional forms for the delivery of services for facilitating learning of the young, we expect it will be possible over time to answer the basic question. We assume that no single type of school will be appropriate for all young people, but that ultimately all persons should have access to an appropriate school, given their individual needs and the socio-cultural configuration of their community. The task is to create and test alternative models of appropriate schools.

In various countries, substantial experimentation has been going forward with innovative, but usually compensatory or rehabilitative, partial programs directed at improving content- and skill-oriented abilities of a specific population. While these programs may be successful in terms of their limited objectives, they have little or no effect on the overall development of the majority of students. The reason for such failure, we assume, is that incremental program development inside a schooling context which is little changed is too weak to produce the needed results. Changing the math curriculum or the science curriculum or the guidance process in a social organization unchanged in other respects cannot produce more than

marginal positive effects. It is becoming increasingly clear that metamorphic development is needed which can so change the climate and the interpersonal relationships within a school that forces can be brought to bear in the learning process which are powerful enough to have fundamental effect on students' capacity to be in charge of their own lives. For this reason the focus must be on the whole school, not on a single part of it.

We believe that the school itself must be taken as an experimental proposition, seen holistically as a social phenomenon, and investigated thoroughly through the methods of science. We suggest that, instead of taking the school as it has come to exist as an independent variable to which children must be adjusted through various socialization and/or compensatory activities, that the school be taken as a dependent variable to be adjusted to suit the characteristics and conditions of the processes of human growth and development. This effort will require not simply a new perspective on schooling but the creation of new ways of inquiring into and pursuing the development of schools seen as organizations, a way of cultivating social learning. Let us turn now to some considerations that are involved in such creation.

School as a Developing Institution

Mankind's generalized response to a need for adaptation is to apply his reasoning capacities to think through a realized problem, its configuration, its possible consequences and to act on the basis of personally drawn conclusions. This is not to say that people in general utilize a purely rational or systematic approach to decisions but rather that a general problem solving, pragmatic form of reasoning is conventionally used for confronting choices faced. Modern society has cultivated elaborate

forms for generating reliable knowledge that are sophisticated versions of this general process, the methods of science. These methods are--at root--the procedures of pragmatic human problem solving:

1. realization of the existence of a problem or a question and an effort to specify it;
2. formulation of an hypothesis or a trial answer to the question;
3. testing of the capacity of the hypothesis to resolve the problem;
4. depending on the results of the empirical test, accepting or rejecting the hypothesis and/or reformulating the problem.

Realization of the existence of a problem or a question, necessarily, is the fundamental keystone of the process. Problems do not exist in the environment of men; they exist, and must be realized, in the transaction between man and his environment. "Questions are necessarily prior to answers, and no answers are conceivable that are not answers to questions."[4] Men realize the existence of problems or questions by recognizing a lack of fit between the concepts or images they hold in their minds and the data they sense from their environment. Consequently, questions are projected by man on the phenomena of interest to him and lead or control the direction of his inquiry and his potential discovery.

The methods of pragmatic problem-solving are basically, in our view, the methods of development, whether one is looking at the development of

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[4]Gunnar Myrdal, Asian Drama--An Inquiry Into the Poverty of Nations (New York: Pantheon, 1968), p. 24.

an individual human being or one of his institutions such as schooling. The concept of development is central to our view of educational improvement. It connotes to us, whether it is used with regard to a person, an organization, or any entity which may be conceived as a living organism, four major qualities or characteristics. In applying the concept development to any organism, we have in mind:

1. that the organism may be transformed from its present state to another state;
2. that the organism has within itself potentiality for such a transformation;
3. the assumption that transformation is desirable; and
4. the realization that some intentional effort or action is required in order to produce the transformation.

We define development consequently as a process of progressive transformations in a given state of affairs regarded as potentially improvable and which is intended to produce transformations held to be worthwhile and justifiable.

Development, as we see it, is not a process which can be caused by external interventions. Rather it requires transactional effort or expression of energy by the developing organism itself. Development is centered in the organism, not in a linear process controlled and executed by some external actor, although, of course, the configuration of external conditions influences--and may prevent or enhance--a developmental process. We have suggested elsewhere that seen globally the process of development includes three main capacities:

1. the capacity to be aware or to sense;
2. the capacity to understand or comprehend; and
3. the capacity to engage the environment (to transact with it, to decide or choose with regard to it, to act in it).[5]

The process of development is rooted in expansion of the set of integrations and differentiations perceived by the organism. The integrations and differentiations of greatest significance for us are those which operate across the boundary of the organism's system, which transact with the environment, and which are perceived by the organism. Because of the dual nature of this process (the necessary involvement of both the internal state of the organism and its perception of responses from the environment), the process of development of organisms depends upon a growing capacity to differentiate and to integrate perceptions in both internal and external domains.[6]

The development of human knowing in individuals operates through a process involving four elements, according to Mooney: sensing, focusing, engaging or transacting and fitting or reflecting. The person undergoing development projects onto his environment certain images or concepts or hypotheses and receives back from that environment a response which he senses or detects, feeds into his center and compares with the projection. If there is incongruity between the image and the feedback, and if other conditions are favorable, the person focuses his attention on the incongruity. If the incongruity is sufficiently compelling so that the person

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[5]Smilansky and Sanders, op. cit.

[6]Based upon the work of Prof. Rose Mooney, whose unpublished writings, advice, and realizations have contributed immeasurably to our understanding of the processes of development.

seeks to deal with it, he generates an image (or hypothesis) and projects this back into the environment and engages with it in a single or multiple series of transactions. The responses from the environment (feedback) are brought into his consciousness and, at the termination of the transactional loop, he seeks to fit newly realized responses into his set of images or cognitive structure.

Since school operations and methods depend on the knowings (images and cognitive maps) of persons involved in the school, we submit that development of the school can occur only through learning on the part of the individuals who act in and on it. The "knowings" of the teachers, administrators, students, parents and community members control the ways in which interpersonal transactions can operate in the school. Consequently, to change those ways of operation, to develop the school, requires mastery by the members of the school of the process of social learning. The process of development of a school involves expansion of the set of integrations and differentiations perceived by the persons involved with the school and operates through the same four sequential and necessary stages that apply to the development of knowing by individuals: sensing, focusing, engaging or transacting, and fitting or reflecting. Let us consider each of these stages as they apply to the development of a school.

Sensing. Take a secondary school as an "organism" in the process of development. This organism exists within a complicated environment comprised of many disparate relevant persons who for certain purposes are comprehended by the persons in the school not as unique and individual persons but as members of a category of people who are treated as similar because they all share a common characteristic, say parents of children

in the school. Assume further that this school has existed for many years in a particular and very homogeneous middle-class neighborhood but that in the recent past a fairly large number of inner-city poor families have moved into homes that were earlier inhabited by middle-class families.

The staff of such a school, if it were not consciously developing its collective knowings, might well not perceive any difference (might not differentiate) in the relevant characteristics of the new students. It might not sense that these students are different in any significant way from earlier students. Any person projects onto his environment certain images or conceptions and receives back from that environment responses which he may sense or detect. Upon sensing responses he feeds them into his center and compares them with the images projected. In the illustration, the projection (in fact, the aggregate of projections posed by individual staff members) might well be inappropriate, and incongruent responses might be received.

Focusing. A developing person or school staff in this situation, upon finding incongruity between the projected image and the feedback response--if other conditions are favorable--focuses attention upon the incongruity. They would revise their projections and begin a sequence of transactional adaptations intended to adjust toward congruity between the projection and feedback. A school staff not capable of development in this situation would, on the contrary, not notice the incongruity, or at least, not focus attention and energy upon it. If, for example, teachers and the principal tended to respond to the students and their parents through their established sets of images and perceptions and to continue to operate in the accustomed ways, it is likely that the students and parents would

begin to express dissatisfaction. The likely outcome would be increasing anger and frustration by the students and parents as they recognized that they were not being provided with usable and satisfying school experiences. Teachers and administrators, on the other hand, would be likely to reject complaints with the explanation that "we are doing what we have always done, it has been successful (a relatively large percentage of our graduates have won National Merit Scholarships) and the problems can be resolved only by getting those kids to get to school on time, to behave, and to do their homework."

Engaging. A school staff undertaking development, in contrast, would focus upon the complaints of the new students; it would recognize that a problem exists with regard to providing learning experiences for them which are appropriate to their quite different prior experiences and perceptions, and begin to engage the problem by trying new or modified ways of operating with regard to those students. It would take as significant and important the question of how to provide appropriate and useful learning experiences to these students and would seek to use modified methods of operation as "hypotheses" or trials to be tested.

Fitting. Subsequently, perhaps after a series of transactions trying different ways of working with those students, receiving responses from them, and determining the meaning of the responses in relation to the engagements, the developing school staff would seek to fit the newly realized responses into its set of images and established ways of conceiving and operating. The organism-school would have learned how to adapt to new students and would, in fact, have developed.

This simple-minded example parodies reality, of course. Adaptations, through cognitive differentiation and integration of conception and perception by teachers and principals are continuously occurring, even in schools that are predominantly static. But conscious, explicit concern for, and attention to, the process of development is rare in schools.

How can a school deliberately engage in the process of development of its mode of operation? We believe it can be done through conscious efforts to comprehend itself as an organism-like social system and to engage actively in the process of generating a better fit between its internal operation and the human and social systems which constitute its environment. We suggest that the conceptual model which may be used as a first approximation for comprehending this process is the model of human learning or development which has been described. It is likely, we suppose, that as men learn more about the process of social learning (learning by collectives or organizations of individuals) this first approximation model will be substantially revised, reformed or replaced by one which better represents the complex realities involved. It provides, however, a useful and practical place to begin.

The Process of Evolutionary Experimentation

The methods to be used in pursuing development of schools, we suggest, may be those used for pursuing the development of an individual person: the methods of pragmatic exploration and the methods of science. Usual descriptions of the methods of science concentrate on that part of the process which occurs in public space: the processes of hypothesis formulation, experimental design, analysis, and verification procedures, all of which are highly cultivated ceremonies. But the private side of science,

as Mooney puts it, that which operates in the mind of the scientist--including the processes of sensing a problem, selecting and focusing on some part or some definition of it, generating the creative energy and inspiration to focus and to engage with it--is less often written about. These processes too are crucial parts of the methods of science and are recognized as such by great scientists. These private or internal parts of the process are equally critical in the process of development of social organisms, and more difficult probably. The reason for this is that in development based on social learning--by definition--the sensing, focusing, engaging and fitting processes require collaboration by many individual, perceiving human beings in subtle realms that involve affective as well as cognitive processes.

In this complex arena, in the context of social modernization, some of the methods used by men to generate reliable knowledge are more likely to be successful than others. What is required, of course, is some means for understanding causal relationships among schooling activities and their consequences in the experiencing, feeling, and behaving of students. The means developed by men which are most useful in a variety of fields for gaining reliable knowledge about causal relationships are those called experimental methods. Experimentation can provide convincing knowledge about causal relationships because it can show that specified effects occur if and only if specified conditions or treatments are present. While "manipulative" experimentation is very useful for establishing causality in certain restricted circumstances, however, a broader view may be necessary when we consider experimenting with regard to schools.

> The term "experiment" is sometimes used in a more restricted sense than we have used it here. The restriction is to inquiry conducted in situations in which the objects and events involved can be deliberately manipulated by the investigator; that is, when the investigator can intervene to influence the events to be observed. Many of those who make this restriction mistakenly assume that manipulation is the only method of control, but this is not so. The astronomer cannot manipulate stars and planets, but he can conduct controlled inquiries into their movements and relationships. Though he cannot manipulate the variables, he can "know" their values, and this knowledge enables him to use the results of his inquiries efficiently in pursuing his objectives. Similarly, the social scientist may not be able to manipulate the group of people he studies, but if he can determine what the important properties of the group are he can investigate the group in a controlled manner.[7]

Experimentation, whether broadly or narrowly conceived, is not simply the most fruitful way to generate reliable answers to the question of how schools can be designed and operated to satisfy the needs of all young people to learn to live successfully and to participate fully in a modernizing society; it is likely to be the only way to do so with assurance of success in the long run. The reason for this assertion is that modernization processes can be expected to continue to produce changes in the life space of individuals and therefore in the ways in which social institutions can serve the needs of those individuals. Consequently, <u>continual adaptation</u> in social institutions and organizations will be required indefinitely into the future. Obligations on individuals and on institutions do, and will continue to, press for appropriate adaptation and creation of new forms of social interaction.

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[7]Russell L. Ackoff, <u>The Design of Social Research</u> (Chicago: University of Chicago Press, 1953), p. 4.

To cope with this condition, developing schools will require well-refined capacities for actively pursuing self-chosen goals. We view experimentation as the basic means available to men for conscious adaptation in pursuit of goals. Effective adaptation will involve, inevitably, experimentation in the natural world of complex human and social phenomena: the projection of hypotheses and of criteria derived from desired goal states; testing of these hypotheses in natural rather than contrived conditions; and interpretation of the results of the experiment in light of the degree to which desired goal states are approached. This is the natural process, we submit, of the development of human understanding and self-development of organisms. It is experimentation under natural and normal circumstances which include all natural variables.

This may be seen by some as a naive view of experimentation. Experimentalists in the social sciences often are concerned principally with sophisticated methodologies for controlling conditions so that the true effect of a treatment can be determined with precision. We do not reject such concerns; indeed, we recognize them as important. On the other hand, however, sophisticated methodologies which require naive assumptions about the nature of the phenomena studied (as is too often the case in educational research) may be even more misleading and far less useful than relatively naive experimental methods applied to learning and educational problems of crucial social importance.

The kind of experimentation we have in mind has been described by Dunn as a procedure of "evolutionary experimentation." Dunn's conception differs from classical experimentation in several ways, the most important of which is that the experimenter is not exogenous to the system he studies:

> He is not dealing with the understanding and design of fully deterministic systems. He is immersed in the act of social system self-analysis and self-transformation. He is the agent of social learning--a purposive, self-actuating, but not fully deterministic process...He is engaged, rather, in formulating and testing developmental hypotheses. The developmental hypothesis is a presupposition that, if the organization and behavior of the social system were to be modified in certain ways, the goals of the system would be more adequately realized. This developmental hypothesis is not tested repeatedly under nearly identical or controlled conditions. Rather, it is tested by the degree to which goal convergence is realized as a result of the experimental design. Problem-solving--hypothesis formulation and testing--is an iterative, sequential series of adaptations of an adaptable, goal-seeking, self-activating system. It can be characterized as evolutionary experimentation.[8]

We also share Dunn's concluding conviction:

> One concludes that amelioration of many of the world's worst social ills, if not the long-run survival of the social process itself, must hinge upon our ability to make the process of social learning more orderly and rational. First, we need to devote concentrated attention in social science to understanding the process. Second, at every stage and level of our understanding we need to apply what we know to orderly and conscious practice and control of the process. This implies that developmental hypotheses should be more objectively and consciously formulated by the group. The evolutionary experiment should be frankly conceived as an experiment and deliberately provided with information feedback that monitors goal convergence and sets the stage for the next round of experimentation. The seductive appeal of utopian social engineering must be put aside. Third, we need to innovate organizational forms and procedures that efficiently integrate the goals and controls of social learning itself. Fourth, we need to acknowledge that this may require an over-arching social goal or value that serves as a final test for evolutionary experiments--that guides the formulation of developmental hypotheses and passes judgment upon paradigm shifts.

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[8]Edgar S. Dunn, Economic and Social Development--A Process of Social Learning (Baltimore: The Johns Hopkins Press, 1971), p. 241.

> We have suggested that this over-arching goal is the development of the growth motives of the human individual...It suggests that human beings can establish the process of human development as the goal of the process of social evolution. Both the process and the goal are understood to be open to further transformation as we advance in the practice and understanding of them...
>
> If this makes the social process and social science anthropocentric in character, no apology is necessary. To deny that this is appropriate would be to deny a fundamental aspect of human nature and the evolutionary process that formed it.[9]

At root, what this means to us is that the school must be seen by school people as a developing, active, adaptive social organization--one which is not static but which uses the natural, human processes of development to regenerate itself and thereby to become increasingly able to serve the human needs of its clients and staff and those persons beyond its boundary (parents and community members) whose lives are affected by its performance. We believe that a school can and should be able actively to pursue its own development and adaptation to changes in the social conditions surrounding it. This is the meaning of the school as a developing institution: a social organization actively seeking to attain desired goals through processes of systematic and self-conscious experimentation.

In order for a school to be self-directively active certain conditions must be present:

1. The school must be conscious of itself. That is, its members, as expressed in their patterns of interaction, must be explicitly aware of their joint performance in as great and full depth of comprehension as possible. Applied to the social system of the school this is the

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[9] Ibid., p. 243 f.

meaning of Dunn's conception of social learning and is a manifestation of the general transformation in human society of which Boulding speaks:

> This movement of the social system into self-consciousness is perhaps one of the most significant phenomena of our time, and it represents a very fundamental break with the past, as did the development of personal self-consciousness many millenia earlier.[10]

The traditional school is not very self-conscious; it operates in the way it does simply because its staff members were socialized in similar schools and unquestioningly behave in their roles now as they were socialized to do earlier. In recent years, the press for evaluation and accountability has induced schools to begin to acquire information about their operations and to reflect upon it. In most schools, however, the flow of information and the asking of sharp and pointed questions about internal operations is a weak and often neglected activity.

2. The school must consciously explore, question, and review its goals and actively seek to achieve them. Etzioni argues that, "The active society, one that is master of itself, is an option that post-modern period opens."[11] We agree. But here we assert that the same proposition applies to schooling and other forms of social institutions: active adaptation to the dynamics of social conditions is an available option and an important obligation of those school organizations which seek to enhance the life chances of their students.

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[10]Quoted by F. Mosteller and D. P. Moynihan, On Equality of Educational Opportunity (New York: Vintage Books, 1972), p. 3.

[11]Amitai Etzioni, The Active Society--A Theory of Societal and Political Processes (New York: The Free Press, 1968), p. vii.

3. The school must have a margin of energy available for its own development. It cannot grow and develop in its adaptive capacity if all its energy resources (especially the time and creativity of its leaders) are totally consumed in survival and maintenance of the present form of operation.

4. The persons in the school must be personally conscious of deficiencies in their collective activities. They must sense an ill-fitting of their present ways with the ways they conceive to be desirable.

5. Persons in the school, especially the leaders, must be so concerned with the ill-fittingness of present forms of operation that they are personally committed to improvement of them. This commitment cannot be an attachment to a particular solution because experience in education has shown that any specific solution, even if it works at all, works only under a particular configuration of circumstances. Rather the commitment must be toward the resolution of a problem or sets of problems. The commitment must carry with it a faith that ultimately solutions will be found. Realistically, it must also carry a realization that further problems will be recognized in the future and require confrontation--this is the nature of the development process. In short, they must be actively-oriented persons with faith in the capacity of reasoning man to cope with problems and opportunities.

6. The staff of the school must have sufficient support from relevant outside persons and groups so that the school has freedom to recreate itself. This requires the generation of adequate consensus with regard to the problems the school is attempting to resolve and with regard to the means employed so that the persons involved do not have to spend excessive

energy in preserving the psychological freedom essential to the task. This support must include acceptance of the risk of failure in any particular experimental activity. By definition, experimentation involves trying the unknown and inevitably some tries will fail. Often, in science, failures produce as much incremental knowledge as success and the same can be expected in schooling experiments. One of the key problems in social science research has been the general tendency to advocate specific reforms as though they are certain of success--with political attack on the responsible administrators if they are not. Campbell suggests that:

> One simple shift in political posture which would reduce the problem is the shift from the advocacy of a specific reform to the advocacy of the seriousness of the problem, and hence to the advocacy of persistence in alternative reform efforts should the first one fail.[12]

A focus on problems and a commitment to their resolution sufficient to tolerate experimentation and social learning are essential conditions for the development of a school.

7. As an organization of human persons, the staff of the school must have the capacity to achieve consensus about priority problems and about operational definitions of them. They must have the capacity as an organization to take a long view and the energy to confront emerging problems on a continuing basis. In short, they must be able, collectively, to accept active, internally-directed problem solving as the permanent base for organizing their interpersonal, professional undertakings.

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[12]Don Campbell, "Reforms as Experiments," American Psychologist, 1969, p. 410.

In short, we propose that the school as a whole, conceived as a developing social organism, be taken as an experimental proposition to be shaped and reformed through methods of evolutionary experimentation. The overriding goal of this experimentation, and therefore, the overall criterion for the experimentation, is to discover and to operate schools which can facilitate learning by adolescents to be in charge of their own learning processes and to cope successfully (in terms of self-chosen criteria) with the problems and opportunities they confront. We do not know in detail how schools should be changed. We believe, however, that modernization permits, as well as demands, that attempts be undertaken to learn what schools might become.

If man's institutions and organizations do not follow the same laws of human growth and development that govern the life of man himself, at least they should operate so as to let their human participants do so. They must operate so as to be growth supportive rather than constrictive, repressive, and destructive of the bases of human security, growth and fulfillment. This is especially true for those institutions and organizations deliberately created to support the process of education and learning. And for this reason, we conclude, it is essential to take school as an experimental proposition in an effort to discover how to make schooling facilitative and supportive of the development of the young.